

REMARKS/ARGUMENTS

Applicant has carefully studied the Examiner's objections together with the cited prior documents and has correspondingly amended this case by filing new claims 16 and 17 which cancel and replace former claims 1, 3-5 and 7 on file and by amending claims 2, 6 and 8-13. Claims 14 and 15 on file are maintained.

New main claim 16 is directed to a method for manufacturing a building element from a mixture of plaster, water and filler, the mixture comprising a quantity of water which is at least equal to twice the quantity of water necessary for crystallisation of plaster at atmospheric pressure, the mixture being compressed in the mold at a pressure at least equal to a threshold value beyond which plaster crystallisation is prevented, the mixture being then unmolded for allowing the plaster in the mixture to crystallize outside the mold.

The quantity of water necessary for crystallization of the plaster at atmospheric pressure is not indefinite. This information is very well known in the art, see for example Chassevent, col. 1, lines 45-47: 19% for moulding plaster, and Dailey (US patent 2,571,343), col. 3, lines 1-3: 18.6% for pure plaster of Paris.

This quantity of water is a constant and is defined by the chemical reaction which transforms plaster into gypsum, i.e. the reaction by which $1.5 \text{ H}_2\text{O}$ is added to $\text{Ca SO}_4 \cdot 0.5 \text{ H}_2\text{O}$ for giving $\text{Ca SO}_4 \cdot 2 \text{ H}_2\text{O}$.

Most of the known prior documents concerning the compression of a mixture of plaster and water in a mold disclose methods in which the mixture comprises the smallest quantity of water, i.e. a quantity of water which is substantially equal to or lower than the quantity which is necessary for the hydration and crystallization of the plaster (about 19% by weight of water) in order to avoid a curing or drying step after unmolding.

However, when a mixture of plaster and water contains only this stoichiometric quantity of water, the compression of the mixture at any pressure does not prevent the crystallization of the plaster.

This crystallization always causes a volume expansion of the plaster and this expansion is produced under pressure in the mold so that it is then very difficult or even impossible to withdraw the molded product from the mold.

It is only when the mixture in the mold contains about twice the quantity of water necessary for the crystallization of the plaster that the pressure applied to the mixture can prevent the crystallization of the plaster, when this pressure is at least equal to a threshold value which is a constant at a given temperature and which increases with the temperature, as mentioned in the present application.

The invention recited in new main claim 16 is therefore characterized by the combination of three essential features with respect to the prior art:

- the quantity of water in the mixture in the mold is substantially equal to or greater than twice the quantity necessary for crystallization of plaster,
- the pressure applied to the mixture in the mold is at least equal to a threshold value beyond which plaster crystallization is prevented,
- the plaster in the mixture crystallizes at atmospheric pressure after unmolding.

This invention is neither disclosed nor suggested by the cited prior documents.

Chassevent (US patent 1,703,097) discloses a method for manufacturing marble plaster, in which “the amount of water should be as near as possible to the amount corresponding to the transformation of the plaster into gypsum” (see col. 1, lines 44-46 and claim 1). This quantity of water is 19% for moulding plaster and 27% for anhydrous plaster.

However this “anhydrous plaster” (or anhydrite) is not really a plaster: this name designates Ca SO_4 whereas plaster is a semi-hydrate of calcium sulphate. The anhydrite is used mainly as a set retarder for cement and is also used in the agriculture industry but it is not used for replacing plaster. See the enclosed article “Uses of Gypsum and Anhydrite”.

In the present application, the plaster used in the mixture compressed in the mold is really plaster, i.e. a semi-hydrate of calcium sulphate and not a anhydrous calcium sulphate. The quantity of water necessary for the hydration of this plaster is about 19% by weight of plaster.

Chassevent discloses only a mixture of plaster and water which comprises a quantity of water equal to that corresponding to the transformation of plaster into gypsum and is therefore not able to anticipate the present invention.

Dailey (US patent 2,571,343) discloses a method of manufacturing a dense product from a mixture of alpha gypsum hemihydrate and a triazine-aldehyde condensation product, the

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quantity of water being that which is sufficient to hydrate the gypsum semihydrate (see claim 1 ; col. 4, lines 24-29 ; col. 8, lines 50-57).

Claus (US patent 1,624,904) and Jagdmann (US patent 1,925,050) do not disclose methods for manufacturing products from a mixture of plaster and water.

For the foregoing reasons, it should be evident that the cited prior documents, taken separately or in view of one another, neither anticipate nor render obvious the inventor recited in new main claim 16. This claim is therefore allowable, along with the claims dependent therefrom.

A copy of the prior documents cited in the specification and in the International Search Report is enclosed, together with a supplemental Information Disclosure Statement and Form 1449. US 5,000,793 and the enclosed WO 88/03916 correspond to EP-A-0 240 571 and US 5,507,996 and WO 92/20502 correspond to EP-A-0 619 773, cited at page 1 of the specification. None of these documents disclose or suggest the invention recited in new main claim 16. In particular, these prior documents do neither disclose nor suggest that the quantity of water in a mixture of plaster, water and filler should be at least twice the quantity necessary for the plaster hydration, that the plaster crystallization in the mixture is prevented by applying a pressure larger than a predetermined threshold to the mixture in the mold, and that the plaster crystallization occurs at atmospheric pressure after unmolding.

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It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, on **January 9, 2005**.



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